

### **Abstract of the Invention**

The invention relates to a method and a device for processing signals of a digital transmission system in general, and for estimating the frequency offset of the transmission system in particular. In one embodiment, the method according to the 5 invention estimates the pulse response of the transmission system and shortens the pulse response by means of a variable prefilter. The duration of the shortened pulse response is, in particular, shorter than the duration of a known symbol sequence which is transmitted twice identically within one method cycle. By comparing samples of the received signal which correspond to the known identical symbols, the frequency offset is estimated 10 reliably, and suitable measures can be taken to compensate it. Consequently, the efficiency of the receiver is substantially improved with respect to the recovery of the transmitted data. The invention can be used, in particular, for transmitting data in blocks, even when there is no freedom from inter-symbol interference, and even when the unshortened pulse response is longer than the known symbol sequence. Transmission 15 using GSM/EDGE systems is one field of application.